OPPD's Fort Calhoun Station
Using the Atom to Produce Electricity

A nuclear power plant, such as Fort Calhoun Station, operates essentially the same way as a fossil-fuel plant. The basic difference is the source of the heat that is used to produce steam.

- The process that produces the heat in a nuclear plant is the fissioning, or splitting, of uranium atoms.
- The part of the plant where the heat is produced is called the reactor core, and the fuel used in the reactor at Fort Calhoun Station is uranium dioxide.

Like all matter, uranium is composed of extremely small particles called atoms. The uranium atom splits, or fissions, when struck by an even smaller particle called a neutron. The fragments from the split atom fly apart at great speed and generate heat as they collide with other atoms.

As each atom is split, it not only gives off heat, but it also releases two or three additional neutrons. These neutrons may in turn strike other uranium atoms, causing more fission reaction. In the Fort Calhoun Station reactor, many trillions of fissions take place every second, producing a great amount of heat.

This heat is used to boil water and produce steam. From that point on, the process of generating electricity is the same as in any fossil-fuel plant.

- The steam, under high pressure, passes through the blades of a turbine, making the turbine spin at high speed. A generator is attached to the turbine, and the rotating shaft of this generator has a magnetic field and is also surrounded by coils of wire.
- When the turbine spins the generator's shaft, a magnetic field in the wire coils produces electricity.

your energy partner®
OPPD
Omaha Public Power District
www.oppd.com

Revised Dec. 2013